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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/802,811	03/18/2004	Tetsuji Sato	250645US2	5882

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EXAMINER	
ALEJANDRO MULERO, LUZ L	
ART UNIT	**PAPER NUMBER**
1763	

DATE MAILED: 10/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/802,811	SATO, TETSUJI	
	Examiner	Art Unit	
	Luz L. Alejandro	1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-6 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-6 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirayama et al., WO 00/24047 in view of Koshimizu, U.S. Patent 5,997,687.

Hirayama et al. shows the invention substantially as claimed including a plasma processing apparatus comprising: a vacuum chamber accommodating therein a substrate 104 to be processed, allowing an inner space of the vacuum chamber to be maintained at a vacuum level; a first electrode 104 (see fig. 8) fixedly disposed at a location in the vacuum chamber; a shower plate 114 installed in the vacuum chamber and facing the first electrode, the shower plate being vertically movable so as to vary a distance between the first electrode and the shower plate; a driving mechanism 109 for vertically moving the shower plate, the driving mechanism being installed outside the vacuum chamber; a bellows unit 106 for air-tightly sealing an opening, the bellows unit having a frame-shaped member (for example, 102 or 110) connected to the driving mechanism, wherein the opening, through which the shower plate is driven by the driving mechanism from the outside of the vacuum chamber, is provided at the vacuum chamber; an electrode supporting member 107 for connecting the frame-shaped member to the shower plate, the shower plate being installed in the vacuum chamber;

and a high frequency power source (for example, 404) for generating plasma by supplying a high frequency power between the first electrode and the second electrode (see abstract and figs. 2-3, 5, and 8).

Hirayama et al. does not expressly disclose the shower plate being a second electrode. Koshimizu discloses a shower plate 112 that is also a second electrode for generating plasma and has a high frequency power source 128 for supplying plasma (see fig. 1 and its description). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of Hirayama et al. so as to have the shower plate as a second electrode because such an apparatus will be capable of effectively and efficiently supplying a uniform concentration of plasma throughout the chamber.

With respect to claims 2-3, note that in the apparatus of Hirayama et al. modified by Koshimizu the first electrode and the second electrode are a lower electrode and an upper electrode, and the upper electrode is supported from underneath the lower electrode.

Concerning claim 4, note that Hirayama et al. does not expressly disclose an exhaust ring for uniformly exhausting the vacuum chamber. Koshimizu discloses an exhaust ring 117 for uniformly exhausting the vacuum chamber (see col. 5-lines 15-20). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of Hirayama et al. so as to include the exhaust ring of Koshimizu because such a configuration allows for the discharge flow to be straightened thereby improving exhaustion.

Regarding claim 5, note that the electrode supporting member includes a cylindrical member 107 or 121 for protecting an inner wall of the vacuum chamber.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hirayama et al., WO 00/24047 in view of Koshimizu, U.S. Patent 5;997,687 as applied to claims 1-5 above, and further in view of Denpoh, US 2003/0062128 or Tanaka et al., US 2004/0020599.

Hirayama et al. and Koshimizu are applied as above but do not expressly disclose a substrate supporting member for supporting the substrate to be processed above the lower electrode, the substrate supporting member being vertically movable by the driving mechanism to pass through the lower electrode. Denpoh discloses a substrate supporting member 17 for supporting the substrate to be processed above the lower electrode, the substrate supporting member being vertically movable by a driving mechanism to pass through the lower electrode (see fig. 1 and its description). Furthermore, Tanaka et al. discloses a substrate supporting member 16 for supporting the substrate to be processed above the lower electrode, the substrate supporting member being vertically movable by a driving mechanism to pass through the lower electrode (see fig. 6 and its description). In view of these disclosures, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of Hirayama et al. modified by Koshimizu so as to include the substrate supporting member as suggested by Denpoh or Tanaka et al. because such a supporting structure allows for easy movement and support of the wafer.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luz L. Alejandro whose telephone number is 571-272-1430. The examiner can normally be reached on Monday to Thursday from 7:30 to 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Luz L. Alejandro
Primary Examiner
Art Unit 1763

September 29, 2005